INDIANA DEPARTMENT OF TRANSPORTATION

INTER-DEPARTMENT COMMUNICATION

Standards Section – Room N642

Writer's Direct Line
232-5353

March 7, 2005

MEMORANDUM

TO: Standards Committee

FROM: Dannie L. Smith, Secretary

RE: Agenda for the March 17, 2005 Standards Committee Meeting

A Standards Committee meeting is scheduled for 9:00 a.m. on March 17, 2005 in the N755 Bay Window Conference Room. Please enter the meeting through the double doors directly in front of the conference room. The following agenda items are listed for consideration.

Old Business

Item 2-1 *204*	Mr. Miller *Geotechnical Instrumentation*	3/17/05 200-44	3
Item 2-11 *809*	Mr. Poturalski *ITS Controller Cabinets and Foundations*	3/17/05 800-73	8
Item 2-12 Standard Drawings	Mr. Poturalski 809-ITSC-01 thru 07	3/17/05	13
Item 2-16 *925*	Mr. Poturalski *ITS Controller Cabinet*	3/17/05 900-220	21
Item 2-17 203.08	Mr. Cales Borrow or Disposal	3/17/05 200-21	29

New Business

Item 3-1 104.08	Mr. Cales Final Clean-Up	3/17/05 100-31	32
Item 3-2 105.10	Mr. Kuchler Inspection of Work	3/17/05 100-40	33
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Item 3-7 401.18	Mr. Kuchler Pavement Smoothness	3/17/05 400-11	40
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Item 3-12 502.23	Mr. Kuchler Basis of Payment	3/17/05 500-25	45
Item 3-13 914.08(c)	Mr. Kuchler Substitutions	3/17/05 900-123	46

cc: Committee Members (7)
Districts (28)
FHWA (3)
ICI Representative (1)
IMAA Representative (1)
APAI Representative (1)
CE of I Representative (1)
ADS Representative (1)
Mirich Representative (1)
ACPA Representative (1)
Contech Representative (1)
IKO Representative (1)
Bridgetek Representative (1)
INDOT Toll Road (3)
Traffic Design (3)
Estimators (3)
Specification Writers (4)

REVISION TO 2006 STANDARD SPECIFICATIONS

SECTION 204, DELETE LINES 1 THROUGH 100.

SECTION 204, AFTER LINE 101, INSERT AS FOLLOWS:

SECTION 204 – GEOTECHNICAL INSTRUMENTATION

204.01 Description

This work shall consist of providing, installing, and maintaining geotechnical instrumentation including settlement plates, slope or toe stakes, and standpipe piezometers as directed and in accordance with 105.03.

MATERIALS

204.02 Materials

Materials shall be in accordance with the following.

B Borrow.....211.02
Coarse Aggregate, Class D or Higher, Size No. 53.....904
Ottawa Sand..... AASHTO T 252*
Structure Backfill, Size No. 30 904
** Ottawa Sand shall have a minimum permeability of 25.0 ft/day (8.3 m/day).*

Bentonite chips shall consist of commercially processed angular fragments of pure bentonite, without additives.

Bentonite-cement grout shall consist of a mixture with the ratio of 25 lb (11.36 kg) of bentonite with 94 lbs (42.64 kg) of Portland Cement, Type I in accordance with 901.01(b) and 30 gal. (113.4 L) of water.

CONSTRUCTION REQUIREMENTS

204.03 Settlement Plates

Settlement plates consist of 0.5 in. by 3 ft by 3 ft (13 mm by 1 m by 1 m) steel plates equipped with sections of 3/4 in. (19 mm) pipe and 2 in. (50 mm) galvanized threaded pipe and couplings to act as a cover or guard.

(a) Installation Requirements

Each settlement plate shall be placed on a horizontal plane consisting of a compacted leveling layer of B borrow whose surface is not less than 1.0 ft (0.3 m) below the elevation of the adjacent area. The first section of pipe shall then be installed by welding to the settlement plate and bottom elevation of the settlement plate is recorded. The area is backfilled with B borrow and thoroughly compacted. The couplings shall be tack welded and the top elevation of the first pipe section is recorded before starting the first lift of grading operations.

The pipe sections for the settlement plates shall be 3/4 in. (19 mm) steel pipe, 4.0 ft (1.2 m) long and threaded on both ends with proper fittings so that such pipe sections can be extended vertically from the center of the plates up through the new embankment as it increases in height during grading operations. A 2 in. (50 mm)

diameter cover pipe shall be slipped over and centered on the standpipe and not welded to plates. The 3/4 in. (19 mm) steel and cover pipes shall extend a minimum 2.0 ft (0.6 m) or more above the grade of the new embankments at all times during grading operations and monitoring period.

The slope or toe stakes shall be installed, if specified, as directed by the Engineer. The settlement stakes shall be 3/4 in. (19 mm) by 4.0 ft (1.2 m) steel rods.

B borrow shall be used as compaction material around the settlement plates and pipes and shall be placed in accordance with the applicable requirements of 211.

(b) Instrument Readings and Settlement Period

During the construction of the embankment, elevation readings will be taken on all settlement plate extension pipes and stakes at the end of each seven-day period, or more frequently if required. After the embankment is constructed to subgrade elevation, additional readings will be taken each seven-day period for 28 days and monitoring will be ceased if settlement rate per week is 1/4 in. (6 mm) or less for four consecutive weeks.

If the results of any readings indicate that the new embankment has settlement greater than 1/4 in. (6 mm) the evaluation period will be extended until it meets the requirements. If the results of the readings indicate that the new fill has settlement equal to or less than 1/4 in. (6 mm) the period of settlement time may be reduced as directed.

If lateral movement is noticed during the construction of the fill, the work will be suspended and corrective measures taken as directed.

Settlement plates, extension pipes, cover pipes, and settlement stakes shall be protected during construction operations and during the monitoring of the fill.

204.04 Standpipe Piezometers

The standpipe piezometers shall be installed by a Department approved geotechnical consultant prior to placing the first lift of embankment. Piezometers consist of 1/2 in. (13 mm) leak proof, flush-coupled Schedule 80 PVC pipe or ABS standpipe extending to the surface of the embankment with an attached polyethylene tip in accordance with AASHTO T 252.

(a) Installation Requirements

A separate water-monitoring borehole shall be installed outside the influence of the fill. This shall be a minimum 2 in. (50 mm) diameter borehole, cased with slotted pipes, drilled to a recommended depth and location or as directed by the Engineer, to establish ground water elevation prior to piezometer installation.

The installation of the standpipe piezometer shall precede placement of any embankment by at least two weeks to allow time for testing of the installation. The piezometer shall be maintained and protected during the embankment construction. The hollow stem auger shall be advanced to an approximate depth of 6 in. (150 mm) below the recommended piezometer tip elevation. Augers shall be cleaned and washed inside for its full length. The wash water shall be replaced with clean water.

The auger shall be withdrawn 6 in. (150 mm) by means of jacking or other steady pull operations. The hole shall be filled to the bottom with saturated Ottawa sand and

tamped with an annular tamping hammer. The depth shall be measured and provided to the Engineer.

The tip shall be attached to the standpipe and tested for free flow of water. The bottom end of the tip shall be plugged and soaked in water if a porous stone tip is used. The tip and standpipe shall be filled with clean water. The tip shall be lowered into the auger until it rests on the top of the sand placed and the elevation of the tip should be documented. Excess head shall be maintained in the standpipe during lowering to ensure that a small amount of water flows out of the tip.

The auger shall then be pulled or jacked up to the equal of the length of the tip in increments of 6 in. (150 mm). Water saturated Ottawa sand shall be filled into the auger at each increment until it comes up to the elevation of the top of the tip. This layer of sand shall not be tamped in order to avoid damage to the tip.

The auger shall be raised 12 in. (300 mm) and filled with saturated Ottawa sand in 6 in. (150 mm) increments. Repeat adding Ottawa sand until the backfilling reaches a minimum of 6 in. (150 mm) below the elevation of the strata change or as directed by the Engineer. In locations where there is no strata change, the Ottawa sand shall be placed a minimum of 12 in. (300 mm) above the top of the tip.

The augers shall then be pulled a minimum 12 in. (300 mm), and sealed with bentonite chips in accordance with AASHTO T 252 in 6 in. (150 mm) lifts. The top of the seal shall be a minimum of 6 in. (150 mm) above the strata break. The tamping hammer weight on a measuring line shall be used to insure the bentonite seal is in place. During filling and tamping operations, the standpipe shall be kept in tension. The remainder of the hole shall then be backfilled with cement-bentonite grout as the augers are withdrawn. The riser pipe shall be centered in the auger while backfilling. Depth for various stages shall be recorded on the Engineers' logs.

If the piezometer location is not in an area of proposed fill, a protective metal cover, about 3 ft (1 m) long shall be installed at the top with about 2 ft (0.6 m) below the surface and 12 in. (300 mm) above the surface. A 6 in. (150 mm) circular pad of coarse aggregate 6 in. (150 mm) thick shall be filled around the cover. A lockable cap shall be securely attached to the protective metal cover.

If the piezometer location is in an area of proposed fill, PVC casing shall be used around the piezometer standpipe in order to protect the pipes during embankment construction. B borrow shall be placed and compacted around the casing without disturbing the casing.

The casing and standpipe shall be extended as the fill is placed, by adding extra lengths not to exceed 5.0 ft (1.5 m). The top of the standpipe shall be at least 12 in. (300 mm) above the grade of the new fill. Each time the casing and standpipe are extended, the casing shall be filled with structure backfill. The last extension of pipe shall be of such length that it extends 12 in. (300 mm) above grade. It shall be filled with structure backfill to within 9 in. (225 mm) of the top of the casing. A 6 in. (150 mm) circular pad of coarse aggregate, 6 in. (150 mm) thick shall be filled around the pipes. A lockable cap shall be securely attached to the protective cover.

When the standpipe is completed it shall be checked for obstructions by dropping a weighted line through the pipe. The standpipe shall then be filled with water and periodic readings made of the water level until the ground water level is stabilized. Hydrostatic time lag required for equalization will be provided by the geotechnical report. If required, the standpipe shall be flushed and retested at the direction of the Engineer. Ground water readings shall be provided to the Engineer.

Standpipe piezometers, and cover pipes shall be protected during construction operations and during the monitoring the fill. In the event of damage, fill construction shall be suspended in this area until the piezometer is restored.

(b) Readings and Maintenance of Piezometer

The Engineer will conduct and record all observations and measurements required to determine natural ground water elevations and pore pressures induced by embankment construction. Monitoring intervals will be once every day for the first seven days, once every other day for the next eight, and then, once every three days through the end of construction of the fill. The elevation of the natural ground water existing at the time of installation, prior to placement of any fill, will be used as a reference to determine baseline pore pressures. Ground water and pore pressure test results will be made available to the Contractor.

The pore pressure measurement in conjunction with settlement data will be sent electronically to the Department's Geotechnical Section within one day of the readings for approval. If it is determined that pore-water pressures have not sufficiently dissipated, fill placement shall be suspended, and the monitoring period extended as directed.

If monitoring is to be continued after paving in a traffic accessible area, the pipe shall be cut off 6 in. (150 mm) below the finished grade and a handhole in accordance with 807.09 shall be installed for monitoring access. When the evaluation is completed, the water monitoring borehole and piezometers shall be backfilled with bentonite-cement grout.

204.05 Method of Measurement

Settlement plates, stakes, standpipe piezometers, and water monitoring boreholes will be measured by the number of units installed.

204.06 Basis of Payment

Settlement plates, stakes, standpipe piezometers, and water monitoring boreholes will be paid for at the contract unit price per each.

Payment will be made under:

Pay Item	***Pay Unit Symbol***
Settlement Plate	*EACH*
Stake	*EACH*
Standpipe Piezometer	*EACH*
Water Monitoring Borehole	*EACH*

REVISION TO 2006 STANDARD SPECIFICATIONS

SECTION 204, CONTINUED.

The cost of furnishing, installing, and maintaining settlement plates, extension pipes, cover pipes, B borrow, structure backfill, coarse aggregate and all necessary incidentals shall be included in the cost of settlement plates.

The cost of backfilling of piezometers and water monitoring borehole will be included in cost of standpipe piezometer.

Cost of handholes, protective covers, bentonite, Ottawa sand, stone tips, casing, drilling, tubing or PVC pipe, backfilling, measurements, damages to the equipment during construction will be included in the cost of standpipe piezometer.

No additional compensation will be made for any costs incurred related to the repair of settlement plates, pipes, stakes or standpipe piezometers as the result of damage by the Contractor.

Other sections containing specific cross references:

None

General Instructions to Field Employees
Update Required? Y___ N___
By - Additional or Revision

Frequency Manual
Update Required? Y____ N____
By – Addition or Revision

Recurring Special Provisions potentially affected:

Standard Sheets potentially affected:

See Above

Motion: Mr.
Second: Mr.
Ayes:
Nays:

Action: Passed as submitted: revised
Effective: - _____Letting
_____Supplementals

Withdrawn. Resubmit? _____

Received FHWA Approval? _____

REVISION TO 2006 STANDARD SPECIFICATIONS

SECTION 809, BEGIN LINE 1, INSERT AS FOLLOWS:

SECTION 809 – ITS CONTROLLER CABINETS AND FOUNDATIONS

809.01 Description

This work shall consist of furnishing and installing ITS cabinets and foundations in accordance with 105.03.

MATERIALS

809.02 Materials

Materials shall be in accordance with the following:

ITS Controller Cabinet.....925
Padlock.....925.04(aa)

Materials for ITS cabinet foundations shall be in accordance with 805.02.

CONSTRUCTION REQUIREMENTS

809.03 General

ITS cabinet foundations shall be installed in accordance with 805.13.

A seal of silicone caulking compound shall be placed between each controller cabinet and the concrete foundation after the cabinet placement.

A rubber duct seal shall be used to seal all conduits that enter the bottom of the cabinet.

The input power source to the cabinets shall be 240 volts AC and 60 amps.

One laminated 11 x 17 in. (280 x 430 mm)site drawing shall be included in the data pocket of each cabinet.

809.04 Grounding

All ITS controller cabinets and foundations shall be grounded in accordance with the ITS grounding specification.

809.05 Cabinet Wiring

Wiring within ITS cabinets shall be neatly arranged and ty-wrapped, or enclosed in expandable braided polyester sleeving. All cabinet wiring harnesses shall be neat, firm, routed, and mechanically supported to minimize crosstalk, electrical interference, and to prevent inadvertent pulling. AC power cable shall be routed and bundled separately from shielded control cables: i.e. logic voltage, video cables, RF cables, etc.

All conductors, except for the equipment-grounding conductors, shall be individually labeled at each termination with a unique identifier. All terminal blocks shall be labeled in accordance with the appropriate standard schematic drawings in the plans.

Conductors used in cabinet wiring shall terminate with properly sized captive terminals, spade type terminals, or shall be soldered. All crimp-style connectors shall be applied with a proper tool that prevents opening of the handles until the crimp is completed.

No more than 3 conductors shall be brought to any one terminal. Two flat metal jumpers, straight or U-shaped, may also be placed under a terminal screw. At least 2 full threads of all terminal screws shall be fully engaged when the screw is tightened. No live parts shall extend beyond the barrier.

Connectors, or devices plugging into connectors, shall be provided with positive means to prevent any individual circuit from being broken due to vibration, pull on connecting cable, or some similar disruptive force.

809.06 Field Testing

Cabinets and ITS components shall be field tested in accordance with the field test procedure furnished by the Department and the test results shall be submitted to the ITS Electronics Technician of the Operations Support Division. The Contractor shall record all test readings, in triplicate, on the field test procedure form. The Contactor shall complete, sign, and date the forms before submitting them to the ITS Electronics Technician. All necessary equipment and personnel shall be provided to ensure the tests are safely conducted. The Electronics Technician must be present to witness the tests. A cabinet must pass every test to be accepted. If the cabinet fails, the problem shall be corrected and a new test shall be arranged.

The Electronics Technician's office is located at the Indianapolis Traffic Management Center, 8620 East 21st Street, Indianapolis, IN 46219. The phone number is (317) 899-8606. The technician shall be given at least 36 h advance notice of the test.

809.07 Clean-Up

When the installation is completed, all disturbed portions of the construction area shall be cleaned and all excess excavation or other materials shall be disposed of in accordance with 104.05 and 203.10. The site shall be restored to its original conditions.

809.08 Method of Measurement

ITS controller cabinet foundations will be measured per each of the type and size installed, complete and in place. ITS controller cabinets will be measured by the number of units installed, complete and in place.

809.09 Basis of Payment

ITS controller cabinet foundations will be paid for at the contract price per each of the type and size specified. ITS controller cabinets, complete, in place, will be paid for at the contract unit price per each.

REVISION TO 2006 STANDARD SPECIFICATIONS

SECTION 809, CONTINUED.

Payment will be made under:

Pay Item	***Pay Unit Symbol***
ITS Controller Cabinet	*EACH*
ITS Controller Cabinet Foundation, ____, _____ (*type* *size*)	*EACH*

The cost of all cabinet accessories, mounting hardware, anchor bolts, handles, setup and wiring shall be included in the cost of the ITS controller cabinet.

The cost of all grading necessary for installation of the foundations and the final clean-up of the area shall be included in the cost of the ITS controller cabinet foundation.

The cost of padlocks shall be included in the cost of the ITS controller cabinet.

Other sections containing specific cross references: None	General Instructions to Field Employees Update Required? Y___ N___ By - Additional or Revision Frequency Manual Update Required? Y____ N____ By – Addition or Revision
Recurring Special Provisions potentially affected: None	Standard Sheets potentially affected: See Item 2-12
Motion: Mr. Second: Mr. Ayes: Nays:	Action: Passed as submitted; revised Effective - _____ Letting _____ Supplementals Withdrawn. Resubmit? _____ Received FHWA Approval? ____

FIELD TEST PROCEDURE FORM FOR ITS CABINETS AND COMPONENTS

Visual Inspection	Acceptable	Non-Acceptable	Comments
Wiring neatly arranged and tie-wrapped or in plastic tubing or webbing			
Wire colors in accordance with specification drawings			
Conductors, except equipment-grounding conductors, labeled at each termination with a unique identifier			
Equipment labeled properly in accordance with the cabinet diagrams			
Microloop lead labeled at its termination in the terminal block			
Adequate seals making cabinet rainproof			
All exterior seams for the cabinets and doors continuously welded, and all exterior welds ground smooth			
Locks and padlocks are all functional			
Two spare filters provided with Cabinet			
All documents in Data Pocket			
Equipment properly labeled			
Inspect all terminal strips for broken separators			

Lights Test	Acceptable	Non-Acceptable	Comments
Turn light switch on and off making sure lights turn on regardless of the door switch position			
Each lamp holder contains a 100 watt rugged service incandescent bulb			

Transient Voltage Surge Suppression	Acceptable	Non-Acceptable	Comments
Using a meter, verify that there is 240 Volts entering and exiting the device			
LED indicators should be lit showing device is operating properly			

FIELD TEST PROCEDURE FORM FOR ITS CABINETS AND COMPONENTS
Page 2 of 2

Fan & Heater Test	Acceptable	Non-Acceptable	Comments
Verify fans have a voltage rating of 115 volt			
Verify thermostat that activates the two circulating fans at the top of the cabinet is set to 27°C (80°F)			
Verify thermostat that activates enclosure heaters and circulating fan is set to 2°C (35°F)			
Verify one thermostat activates enclosure heaters and circulating fan			
Verify one thermostat activates the two circulating fans at the top of the cabinet			

Power Outlets	Acceptable	Non-Acceptable	Comments
Turn breaker on, using a volt meter, verify that 240 volts is entering and exiting the Load Center Main Breaker			
Make sure the GFI duplex receptacle is working properly by using the trip-reset feature located on the receptacle			
Using a voltmeter, verify the GFI Duplex Receptacle, and the standard duplex receptacle have 120 volts			

Door Open Switches/Alarm Sensors	Acceptable	Non-Acceptable	Comments
Verify one set of switches are 120 Volts AC and the lights turn off when both cabinet doors are closed			
Very one set of switches are 24 Volts DC and capable of sending an alarm if a cabinet door is open			

Item No. 2-12
Mr. Poturalski
Date: 3/17/05

REVISION TO STANDARD DRAWINGS

809-ITSC-01 ITS Cabinet Detail
809-ITSC-02 Cabinet Layout Details
809-ITSC-03 Cabinet Punch Out Details
809-ITSC-04 Cabinet Schematic
809-ITSC—05 Detector Card Rack Detail
809-ITSC-06 ITS Cabinet Microloop Card Rack Wiring Diagram
809-ITSC-07 Engraved Tag Detail

Other sections containing specific cross references:

None

General Instructions to Field Employees
Update Required? Y___ N___
By - Additional or Revision
Frequency Manual
Update Required? Y____ N____
By – Addition or Revision

Recurring Special Provisions potentially affected:

Standard Sheets potentially affected:

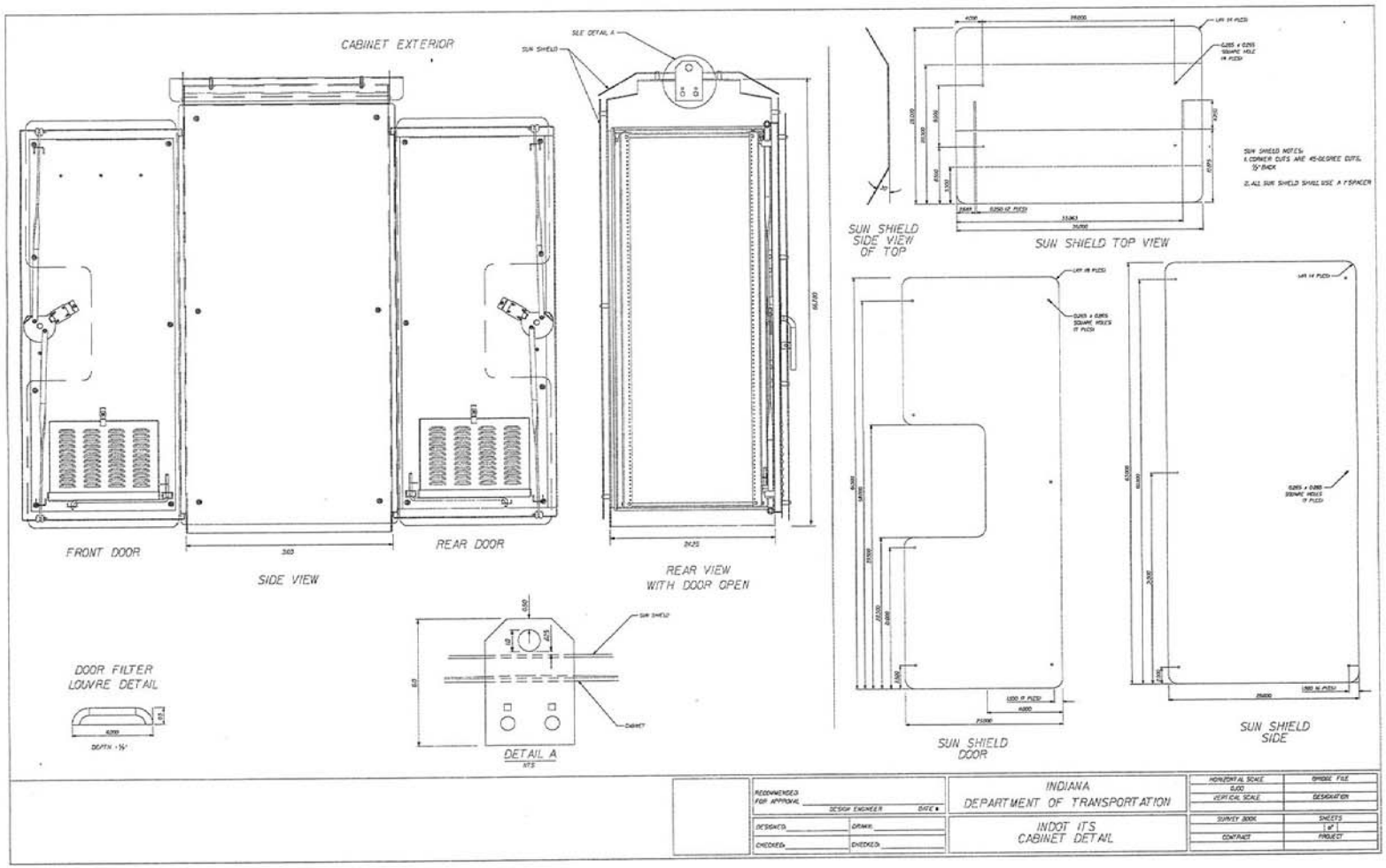
See Above

Motion: Mr.
Second: Mr.
Ayes:
Nays:

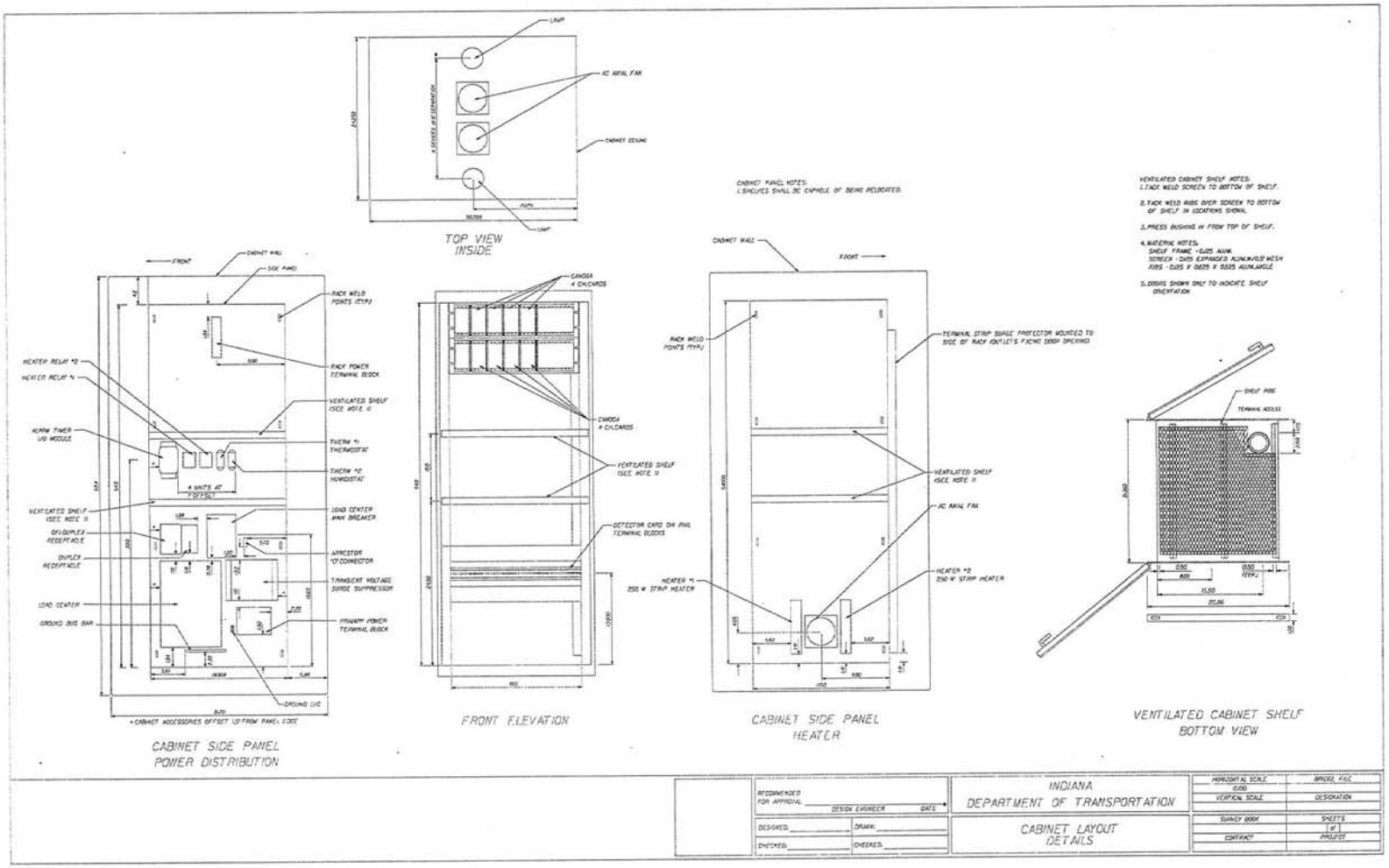
Action: Passed as submitted; revised
Effective - _____ Letting
_____ Supplementals

Withdrawn. Resubmit? _____

Received FHWA Approval? ____

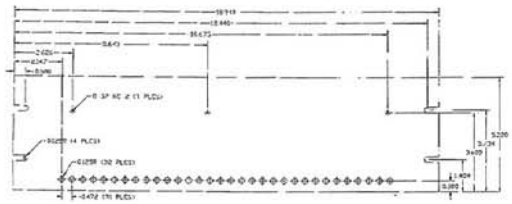


809-ITSC-01 #1 ITS_75_6 12/8/04

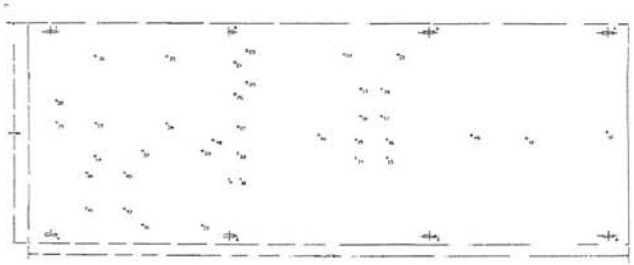


809-ITSC-02

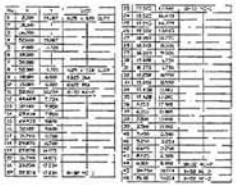
ITS_15-1 #2
12/8/04



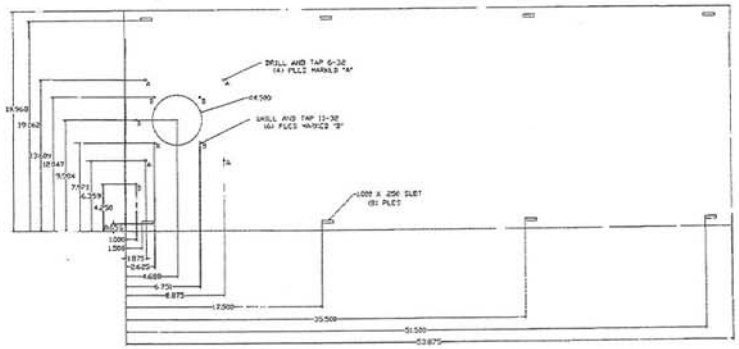
DETECTOR CARD DIN RAIL DETAIL
SCALE = 2/1



NOTE:
ALL DIMENSIONS IN INCHES
UNLESS OTHERWISE NOTED.



POWER DISTRIBUTION PANEL
PUNCH OUT DETAIL
SCALE = 4/1



HEATER PANEL PUNCH OUT DETAILS
SCALE = 4/1

RECOMMENDED FOR APPROVAL _____ DESIGN ENGINEER 4/29/03 DATE		INDIANA DEPARTMENT OF TRANSPORTATION	HORIZONTAL SCALE AS SHOWN / BRIDGE FILE
			VERTICAL SCALE AS SHOWN / DESIGNATION GR00804
DESIGNED JSJ	DRAWN JSJ	CABINET PUNCH OUT DETAILS	SURVEY BOOK / SHEETS 75-4 1 of 1 85
CHECKED BB	CHECKED BB		CONTRACT / PROJECT T-00729 / M-465-4 CDS

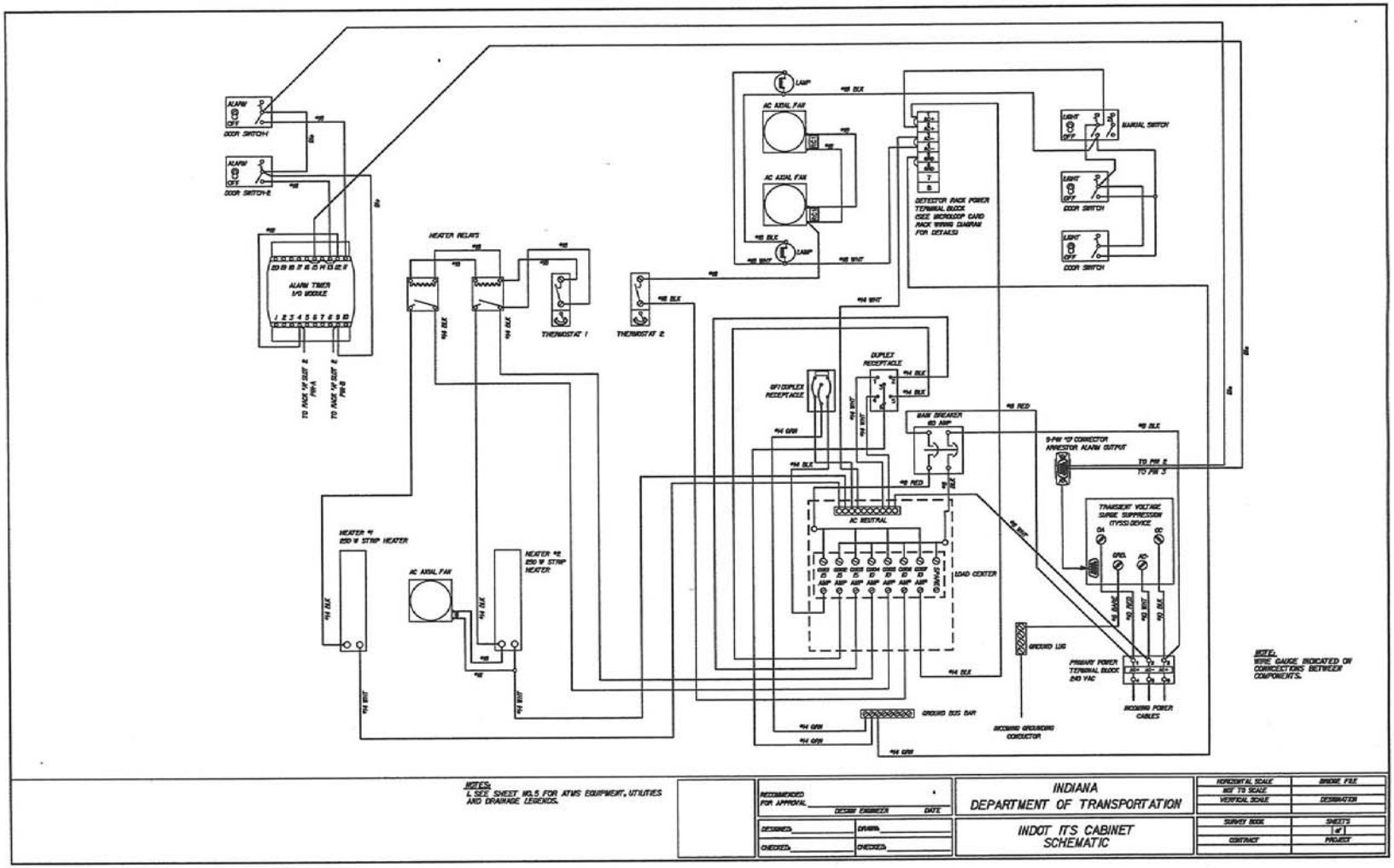
No. 10100400 STATE OF INDIANA REGISTERED PROFESSIONAL ENGINEER

809-ITSC-03

ITS_75-4 5

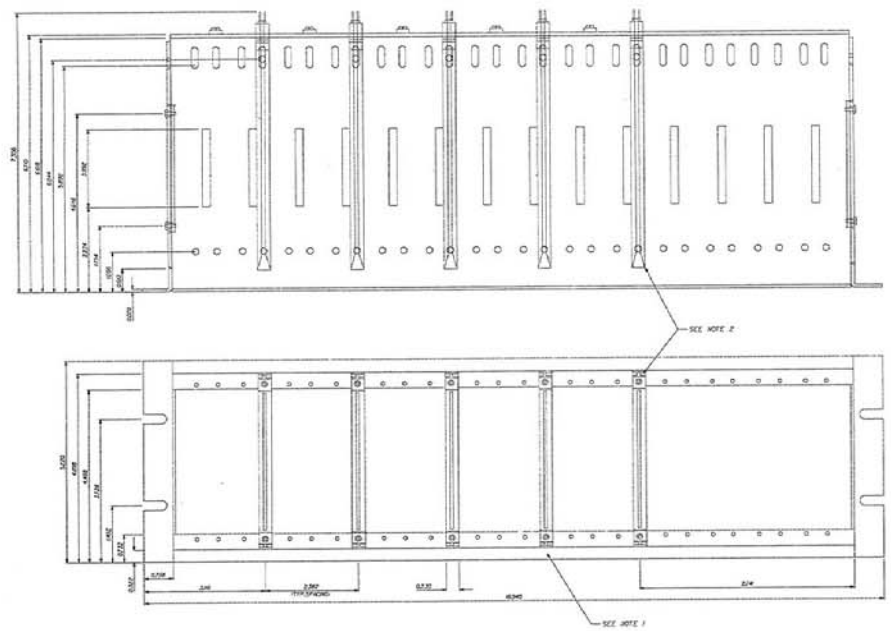
12/8/04

#3

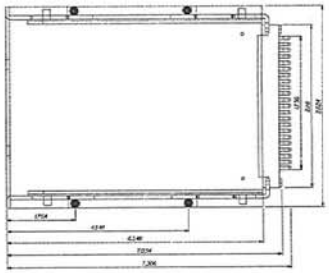


809-ITSC-04

ITS_15-1 update 2
12/8/04 #4



NOTES:
1. APPLY MARKER TAPE TO FRONT LIP OF INPUT FILE CHASSIS TOP AND BOTTOM.
2. CARD GUIDES MUST LINE UP WITH EDGE CARD CONNECTORS.
3. NO CARD GUIDE KEYS ARE TO BE INSTALLED IN THIS ASSEMBLY.
4. DEPTH DOES NOT INCLUDE WIRING.

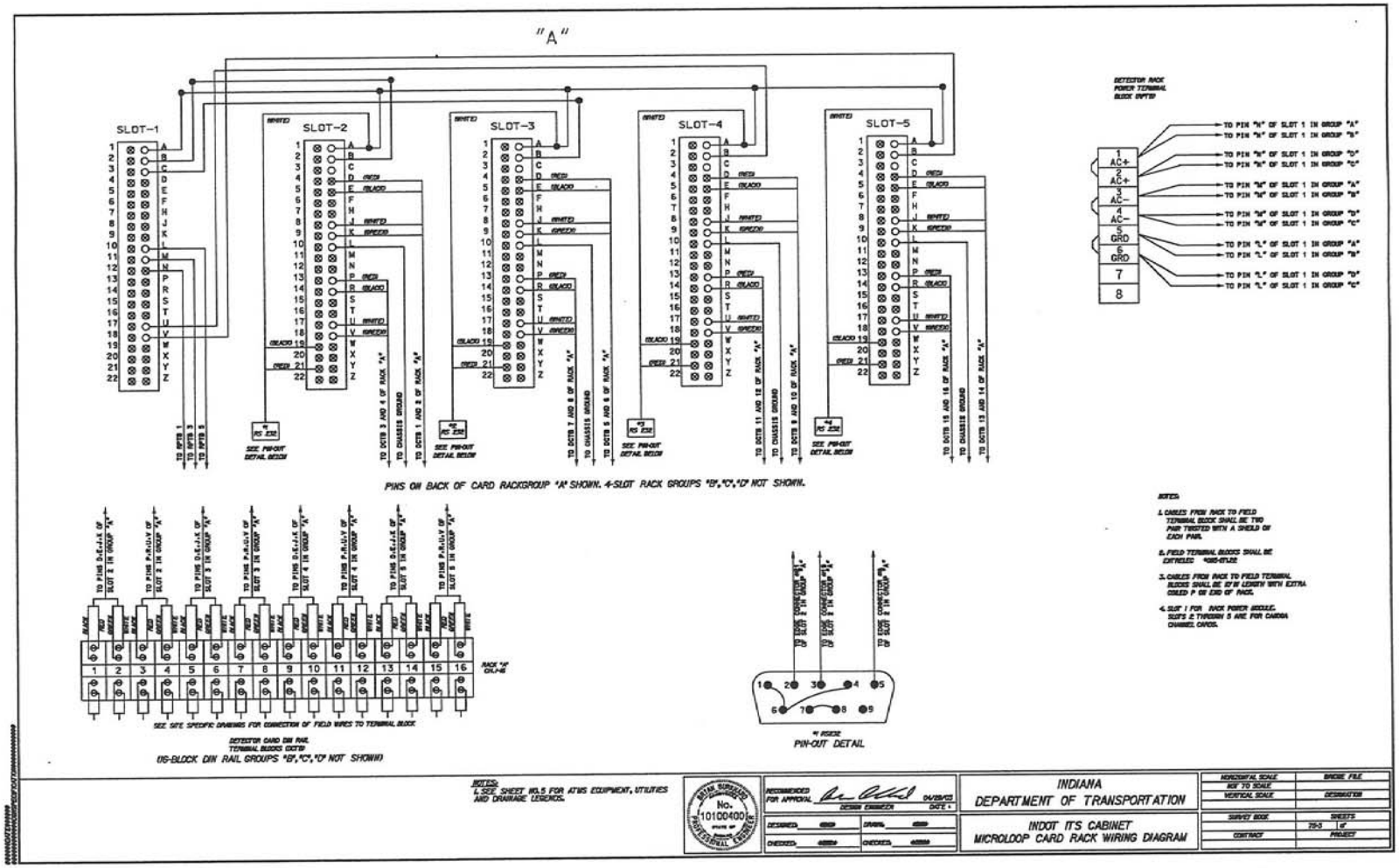


RECOMMENDED FOR APPROVAL _____ DESIGN ENGINEER DATE	INDIANA DEPARTMENT OF TRANSPORTATION	HORIZONTAL SCALE 6000	BRIDGE FILE
		VERTICAL SCALE	DESIGNATION
DESIGNED _____ DRAWN _____	DETECTOR CARD RACK DETAIL	SURVEY BOOK	SHEETS 1 of 1
CHECKED _____ CHECKED _____		CONTRACT	PROJECT

809-ITSC-05

ITS_75-2 #5

12/8/04

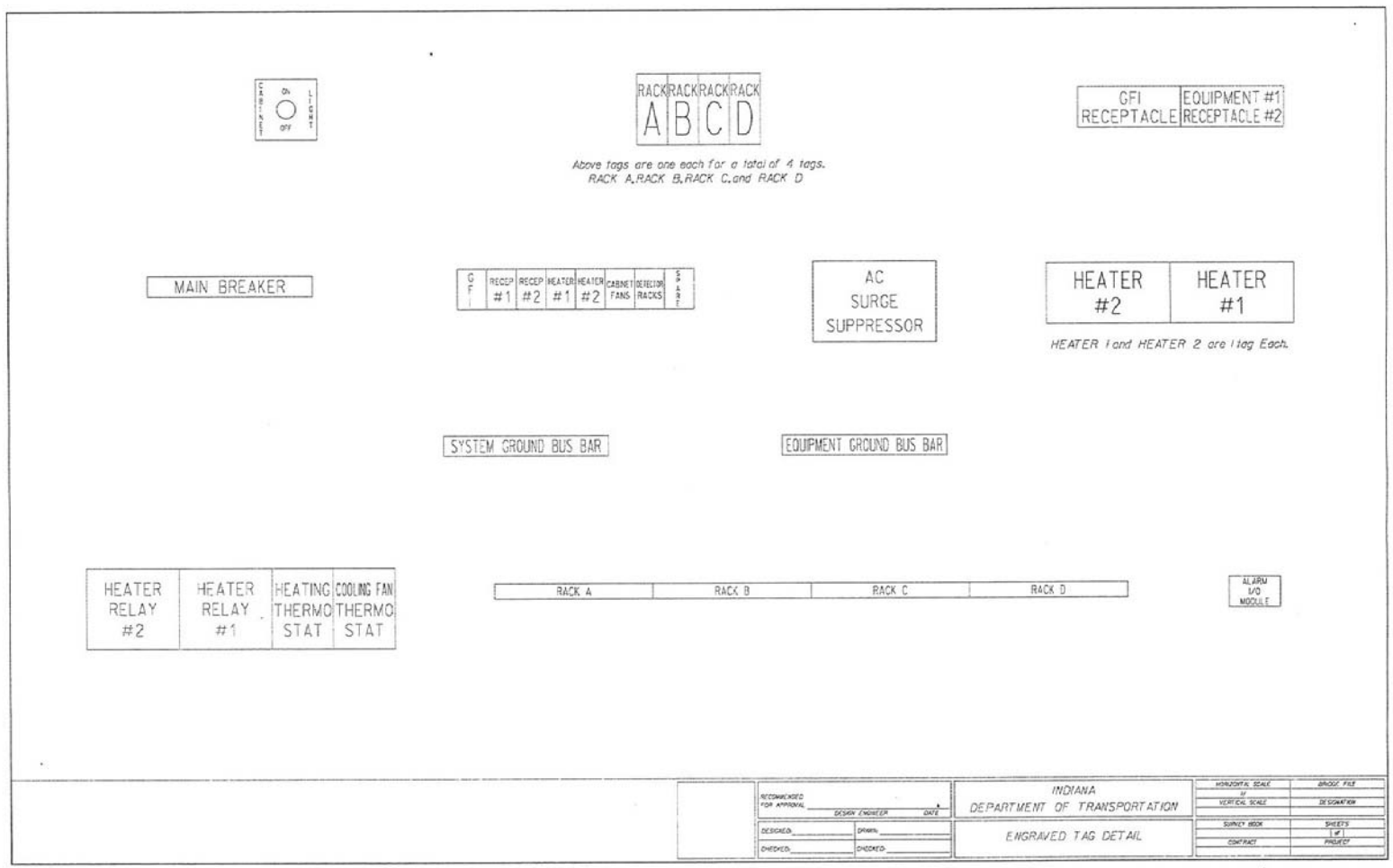


809-ITSC-06

ITS_75-3V7 4

12/8/04

#6



809-ITSC-07

ITS_75-5
12/8/04
#7

REVISION TO 2006 STANDARD SPECIFICATIONS

SECTION 925, BEGIN LINE 1, INSERT AS FOLLOWS:

SECTION 925 – ITS CONTROLLER CABINET

925.01 General Requirements

ITS controller cabinets shall be constructed such that it has a NEMA 3R rating. The cabinet shall be a rainproof cabinet with dimensions of 66 in. (170 mm) in height x 24 in. (600 mm) in width x 30 in. (75 mm) in depth. The cabinet top shall be crowned or slanted to the sides to prevent standing water.

The cabinet, sunshields, doors, and all panels shall be fabricated of 1/8 in. (3 mm) minimum thickness aluminum. The only exception to this aluminum thickness is the detector rack, which shall be fabricated of 0.090 in. (2.3 mm) thickness aluminum. All exterior seams for the cabinets and doors shall be continuously welded. All exterior welds shall be ground smooth. All edges shall be filed to a radius of 5/16 in. (8 mm) minimum.

The cabinet, sunshields, doors, and all panels shall be fabricated from aluminum sheet in accordance with ASTM B 209 (ASTM B 209M), 5052-H32 aluminum sheet.

Welding on aluminum shall be done by the gas metal arc welding process using bare aluminum welding electrodes. Electrodes shall be in accordance with AWS A5.10 for ER5356 aluminum alloy bare welding electrodes.

Procedures, welders, and welding operators for welding on aluminum shall be qualified in accordance with the requirements of AWS B3.0, "Welding Procedure and Performance Qualification", and to the practices in accordance with AWS C5.6.

Each aluminum surface shall be finished in accordance with Military Specification MIL-A-8625F(1), "Anodic Coatings for Aluminum and Aluminum Alloys", type II, class I coating, except that the anodic coating shall have a minimum thickness of 0.0008 in. (0.02032 mm) and a minimum coating weight of 0.04 mg/mm^2. The anodic coating shall be sealed in a 5% aqueous solution of nickel acetate (pH 5.0 to 6.5) for 15 minutes at 206°F (96.67°C). The anodized coating shall be silver in color. Prior to applying the anodic coating, the cabinets shall be cleaned and etched as follows:

- *(a) Clean by immersion in inhibited alkaline cleaner such as Oakite 61A or Diversey 909, or equivalent, 45-60 grams per liter, 160°F (71.1°C) for 5 minutes.*
- *(b) Rinse in cold water.*
- *(c) Etch in a solution of 11 g of sodium fluoride, plus 30-45 g of sodium hydroxide per liter of distilled water at 140-150°F (60-65°C) for 5 minutes.*
- *(d) Rinse in cold water.*
- *(e) Dissolve in a 50% by volume nitric acid solution at room temperature for 2 minutes.*
- *(f) Rinse in cold water.*

The cabinet shall have single front and rear doors equipped with a lock. The doors shall use a Corbin lock number 2, and each cabinet shall be equipped with two number 2 keys. When each door is closed and latched, the door shall be locked. Keys shall be removable in both the locked and unlocked positions. The door handles shall have provision for padlocking in the closed position. The handle shall have a minimum length of 7 in. (180 mm) and shall be provided with a 5/8 in. (16 mm), minimum, steel shank. The handle shall be fabricated of cast aluminum or stainless steel. The cabinet door frame shall be designed so that the latching mechanism shall hold tension on and form a firm seal between the door gasket and the door frame. Cabinet locks shall be the solid brass, 6-pin tumbler rim type. The lock shall have rectangular, spring-loaded bolts. The locks shall be rigidly mounted with stainless steel machine screws approximately 2 in. (50 mm) apart. The front position of the lock shall be flush with the outside surface of the door and have a rotating cover to protect the locking mechanism from sand, dirt, water, and ice.

The cabinet shall not include a police door nor have provisions for a police door.

The latching mechanism shall be a 3-point cabinet latch with nylon rollers. The center catch and pushrods shall be zinc-plated or cadmium-platted steel. Pushrods shall be turned edgewise at the outer supports and shall be 1/4 in. (6 mm) x 3/4 in. (19 mm), minimum. The nylon rollers shall have a minimum diameter of 3/4 in. (19 mm) and shall be equipped with ball bearings.

All cadmium plating shall be in accordance with the Society of Automotive Engineers, SAE-AMS-QQ-P-416, "Plating, Cadmium (Electrodeposited)". All zinc plating shall be in accordance with ASTM B 633-98E1, "Electrodeposited Coatings of Zinc on Iron and Steel".

The door's hinging shall be three or four bolt butt hinges. Each hinge shall have a fixed pin. Doors larger than 22 in. (60 mm) in width or 6 sq ft (0.5574 m^2) in area shall be provided with catches to hold the door open at both 90 degrees and 180 degrees, ± 10 degrees. The catches shall be 1/3 in. (8 mm) diameter, minimum, plated steel rods. The catches shall be capable of holding the door open at 90 degrees in a 56 mph (40 kph) wind at an angle perpendicular to the plane of the door. Door hinges, pins, and bolts shall be made of stainless steel. The hinges shall be bolted to the cabinet. The hinge pins and bolts shall not be accessible when the door is closed.

Door gaskets shall be provided on all door openings and shall be dust tight. Gaskets shall be permanently bonded to the metal. The mating surface of the gasket shall be covered with a silicone lubricant to prevent sticking to the mating surface.

Both cabinet doors shall have louvered openings and shall provide ventilation. A filter shall be provided over the louvers and shall include an aluminum filter cover secured with a spring loaded latch as shown on the plans. The filter shall be 12 in. x 16 in. x 1 in. (300 mm x 400 mm x 25 mm). Two spare filters shall be provided with each cabinet.

The cabinet shall be provided with two metal lifting eyes to be used when placing the cabinet on the foundation. Each eye shall have a minimum diameter of 3/4 in. (19 mm) and shall be capable of lifting 990 lbs (450 kg).

Machine screws and bolts shall not protrude beyond the outside wall of the cabinet.

925.02 Model Approval

Each cabinet model shall be approved prior to use. A period of evaluation will commence when the Department receives a preliminary product evaluation form accompanied by the product brochure, detailed electrical schematics, and cabinet assembly drawings. The Operations Support Division will advise the manufacturer or vendor, in writing, of the date and location to deliver the cabinet for which model approval is requested. Electrical schematics for the cabinet, cabinet assembly drawings, and parts lists shall be furnished with the controller when it is submitted to the Operations Support Division for evaluation and testing.

A list of approved models will be maintained by the Department. Only models from the Department's list of approved ITS ControllerCabinets in effect as of the date of letting, or as otherwise specified, shall be used on the contract. Continued failure and repeated malfunctions of an approved controller or control equipment shall be cause to remove that model from the Department's list of approved products. A design change to an approved model or cabinet will require re-submittal of the model for testing, evaluation, and approval. Permanent addition or removal of component parts or wires will be considered to be a design change.

925.03 Warranty

The cabinet, sunshields, doors, and all other exterior surfaces shall carry a five year warranty against all material imperfections. All other electrical components and wiring shall carry a three year warranty against all imperfections in workmanship or materials.

925.04 Cabinet Accessories

The following accessories shall be furnished and installed with each ITS cabinet.

(a) Rack Frame Assembly

The cabinet shall come equipped with standard Electronic Industries Alliance 19 in. (480 mm) rack frame assembly. The rack frame assembly shall have standard Electronic Industries Alliance vertically spaced threaded holes for attachment of equipment, mounting angles, and shelves. Frame mounting of equipment and shelves shall be available on both door sides of the cabinet.

(b) Equipment Shelves

The equipment rack shall be furnished with two adjustable equipment shelves. A 3 in. (75 mm) hole shall be provided in each shelf. The hole shall be fitted with a nylon snap bushing liner with an outside diameter of 3.16 in. (80 mm), inside diameter of 2.5 in. (63 mm) and a height of 0.72 in. (18 mm). The shelves shall be constructed of an aluminum screen tack welded between the shelf bottom and upper ribs. The shelves shall be capable of being moved in any location.

(c) Sunshield

An aluminum panel sunshield shall be mounted on standoffs on the top and each side of each cabinet.

(d) Side Panels

Two aluminum side panels shall be provided and mounted on the Electronic Industries Alliance rack parallel to the cabinet sides. One panel shall be designated as the "power distribution panel" and the other panel shall be designated the "heater panel".

(e) Data Pocket

The data pocket is to be large enough to hold several drawings, a maintenance log notebook, and several pieces of reference material but not so large as to contact any of the installed equipment.

(f) Equipment Labels

The labels shall have a non-reflective, exterior grade, low glare matte surface finish applied to flexible ABS plastic. The labels shall be black with white lettering and have an engraving depth of 0.002 in. to 0.003 in. (0.0508 to 0.0762 mm). Labels shall conform to the designations on the cabinet diagrams.

(g) Primary Power Terminal Block

A power distribution terminal block shall be mounted on the power distribution panel. The power distribution block shall be a mechanical three pole connector. The connectors for the incoming power shall be able to accept wire sizes between 12 AWG and 2/0 AWG. The load side connectors shall be able to accept wire sizes between 14 AWG and 4 AWG. The rating of the connector shall be 195 amps per pole. The connector elements shall be made from a tin plated, high conductivity aluminum alloy and insulated with high strength thermoplastic housing with a relative temperature index of 125°C. It shall be rated 600 volt, AL9CU. The dimensions shall be 4 in. x 5.2 in. (100 x 132 mm) x 3.23 in. (82 mm) high. The block shall come with one polycarbonate safety cover per pole. Mounting screws shall be No. 10, 0.19 in. (4.83 mm) diameter. The block shall be UL Listed. The terminal block shall be a Burndy Model BDB-11-2/0-3.

(h) Ground Lug

The ground lug mounted on the power distribution panel shall be a heavy-duty 1-hole ground lug, manufactured from electrolytic copper tubing and strip stock. UL Listed and CSA certified for stranded CU wire and for 600 volts. Wire range: 6 AWG -14 AWG. Bolt size: #10. Tang length shall be 1/2 in. (13 mm). Width shall be 5/16 in. (8 mm). The lug shall be an Ilsco Model SLUH-35.

(i) Ground Bus

Rated to 600 volts. 12 taps per ground bar suitable for wire ranging from 6 AWG to 14 AWG. Main ground connection wire range from 4 AWG to 14 AWG. The ground bar shall have a length of 5 15/16 in. (150 mm), a height of 3/4 in. (19 mm), and a width of 11/32 in. (9 mm). It shall be UL Listed. The ground bus shall be an Ilsco Model D167-12.

(j) Transient Voltage Surge Suppression

The transient voltage surge suppression, TVSS, shall have individually fused suppression modes, thermal cutout, operational indictors (LED) to indicate loss of protection or circuit fully operational, including neutral-to-ground-, AC tracking filter with EMI/RFI filtering up to -50dB from 100 kHz to 100 MHz, and a short circuit current rating of 200,000 rms symmetrical amperes. Surge suppression shall be provided for each mode (L-N or L-L, L-G, N-G). The TVSS shall be UL 1449 Second Edition Listed and UL 1283 Recognized. The TVSS shall have 120/240 volt split phase service voltage

and dry contacts for each phase providing a summary alarm. The contacts are terminated in a DB-9 connector.

The surge capacity shall be 80kA/phase. The response time shall be less than 1/2 nanosecond. The unit shall withstand 5000 category C3 impulses with less than 10% drift. It shall be suitable for use under non-condensing relative humidity range of 0 - 95%. The suppressed voltage rating shall be 330 volts L-N, L-G, N-G and 700 volts L-L. Operating frequency: 47 - 63 Hz. Operating temperature: -40°C to +60°C. External mount NEMA 1 standard enclosure. Standard size: 6 in. (150 mm) long x 6 in. (150 mm) wide x 4 in. (100 mm) depth. Weight: 8 lbs (3.63 kg). The TVSS shall be UL 1449 Second Edition Listed, 1283 Recognized and CUL. The unit shall be an Advanced Protection Technologies Model TE/1XF.

(k) Load Center Main Breaker

The load center main breaker shall be enclosed 2 pole, 240/240 volt AC, 60 amp. It shall have a 10,000 rms symmetrical ampere short circuit current rating. The circuit breaker enclosure shall be a Square D, Model QO2TR.

(l) Load Center Panelboard

The panelboard shall be a 120/240 volt AC, 600 volt, 8 pole panelboard. The panelboard shall have a neutral bus bar with three 10 amp breakers, four 15 amp breakers and one spare. The load center shall be main lug only Square D, Model QO. The circuit breakers shall be Square D, Model QO.

(m) GFI Duplex Receptacle

The convenience receptacle shall be a duplex, 3-prong, NEMA type 5-15R grounding type outlet and shall be in accordance with UL Standard 943.

(n) Duplex Receptacle

A standard 3-prong, NEMA type 5-15R grounding type outlet shall be mounted on the power distribution panel.

(o) Terminal Strip Surge Protector

One 48 in. (1220 mm) surge protected terminal strip with ten 15A outlets shall be furnished and installed.

The terminal strip shall have a low profile aluminum housing measuring 1 1/2 x 1 3/16 in. (38 mm x 30 mm) and have a 14/3 SJT cord and a NEMA 5-15P plug. The spacing between the outlets shall be 4 in. (100 mm) and the grounding pin shall be positioned so that it is oriented toward the bottom of the cabinet. The unit shall be in accordance with UL Standard 1449 with a 330 volt clamping level. The unit shall be a Wiremold Model 4810BCS with a 6 ft (2 m) cord.

(p) Door Open Switches

Four dry-contact, 1-pole-form-C (single-pole, double throw), switches shall be provided and installed. Switch poles are to be electrically isolated. One set of switches shall be rated for 5 amp at 120 volt AC to be used to automatically turn the lights off when both cabinet doors are closed. The other set shall be rated for 1 amp at 5 volt DC and are to be used to send a door open alarm. The switches shall be Omron part No. Z-15GQ-B.

(q) Light Switch

A toggle switch 20 amp, DPDT with 0.125 in. (3 mm) diameter hole in solder lugs shall be provided and installed that will manually switch on the lights regardless of the door switch position. The switch shall be McGill Mfg. Co., part No. 0121-7013 or Eaton part No. 7803K13.

(r) Lamp Holders

Each cabinet shall be furnished with two lamp holders. The UL Listed device shall have a medium phenolic base measuring 1.9 in. x 1.9 in. x 1.5 in. (48 mm x 48 mm x 38 mm) and rating 660 watt and 250 volt. The lampholder shall be a Leviton Model 9063.

(s) Lamps

Each lamb holder shall be provided with a 100 watt rugged service incandescent bulb.

(t) Circulating Fans

Three 110 cft/min (3 m^3/min), 4.7 in. x 4.7 in. x 1.5 in. (120 mm x 120 mm x 38 mm) cooling fans shall be installed within the cabinet to circulate internal air. The fans shall have an allowable ambient temperature range of ~14°F to ~158°F (~ -10°C to ~ +70°C) and a voltage rating of 115 volt. The fan casings shall be aluminum alloy. The impeller shall be UL94V-O reinforced plastic. The fans shall have ball bearings and an impedance protected, shaded pole induction motor. The fans shall not be exposed or routed to the external environment. The environmental controller shall control fan operation. The fans shall activate at 80°F (27°C). The fans shall be NMB Model 4715FS-12T-B50-D00.

(u) Enclosure Heaters

Two 250 watt ceramic insulated strip heaters shall be furnished and installed in the cabinet to protect against condensation damage and to keep the electronic components above freezing in the winter. The strip heaters shall have a seamless stainless steel sheath with ceramic element support and magnesium oxide packing. The environmental controller shall control enclosure heater operation. Heating strips shall not be installed on either door. The heaters shall be 8 in. (200 mm) long by 1 1/2 in. (38 mm) wide and shall have two wire terminals. The strip heaters shall be UL Recognized. The heaters shall be Hotwatt Model CS-8.

(v) Heater Relays

Two solid state SPST-NO heater relays shall be installed on the power distribution side panel. Load current range 0.04 to 25 amp, one-cycle surge 250 amp peak. Rated for 120 volt AC and UL Recognized.

(w) Thermostats

The cabinet shall be furnished with two thermostats installed. One thermostat shall activate the enclosure heaters and circulating fan with the internal cabinet temperature goes below 35°F (2°C). The other thermostat shall activate the two circulating fans at the top of the cabinet when the internal cabinet temperature goes above 80°F (27°C). The thermostats shall be Thermodisc, Type AL-1.

(x) Detector Card DIN Rail Terminal Blocks

Double-deck compression clamp DIN rail terminal blocks shall be hard wired to the Canoga Card Racks. A total of 64 terminal blocks shall be mounted to an aluminum

panel that is secured to the Electronic Industries Alliance rack. The terminal blocks shall allow wires between 24 AWG and 10 AWG. Each measures 2 5 in. x 0.2 in. (65 mm x 6 mm). The terminal blocks shall be the Entretec part number 011527122 type M 4/6 D2.

(y) I/O Module

An isolated 8-Bit digital input module shall be provided and installed. It shall have 6 fully isolated inputs and 2 share common ground inputs. High voltage inputs. Logic levels: LOW +1.0 volt DC max, HIGH +3.5 to +30 volt DC. Input impedance: 3 kohm. Input isolation: 3000vrms. Power consumption: 0.4 watt. Operating temperature: 14°F (-10°C) to 158°F (70°C). The I/O module shall be a Measurement Computing, Model CB-7052.

(z) Detector Card Rack

The detector card rack shall be as shown on the plans.

(aa) Padlocks

Padlocks shall be classified as a high security padlock with hardened shackles, laminated body, a minimum 4 pin cylinder, and come complete with a weather cover to protect the lock body and cylinder from sand, dirt, water, and ice. A wafer cylinder shall not be used. Keys shall not be provided with each padlock supplied. All padlocks shall be keyed alike and shall be keyed identical to the keys currently in use by the Department. The main body width of the padlock shall not exceed 3 in. (75 mm) and shall have a shackle length of 2 1/4 to 3 3/4 in. (56 to 94 mm) and a shackle diameter of 5/16 in. (8 mm). For padlock information, contact the ITS Operations Engineer, Indiana Traffic Management Center, 8620 E. 21st Street, Indianapolis, IN 46219. The phone number is (317) 899-8601.

(bb) Other Cabinet Equipment

In addition to the equipment specified above, the cabinet shall be furnished with all ancillary equipment, brackets, wiring ducts, hardware, etc, as is necessary to provide a neat and finished appearance. These items along with all associated cables, connectors, wiring, etc. shall be labeled on the required submittal drawings.

925.05 Cabinet Wiring

All conductors used in ITS cabinet wiring shall be in accordance with the following color-code requirements.

(a) The AC neutral conductor of a circuit shall be identified by a continuous white or natural gray color.

(b) The equipment grounding conductor shall be identified by a continuous green color or by a continuous green color with one or more yellow stripes.

REVISION TO 2006 STANDARD SPECIFICATIONS

SECTION 925, CONTINUED.

(c) The ungrounded conductors shall be identified by any color not specified in a or b above.

All wire shall be type THHN with color and gage as shown on the plans with the exception of the microloop card rack wiring which will be 2-pair twisted with a shield and plentium rated.

Connectors used for interconnecting various portions of circuits together shall be designed and constructed for the application involved. Connectors shall be designed to provide positive connection of all circuits, and easy insertion and removal of mating contacts. Connections shall be permanently keyed to prevent improper connection of circuits.

925.06. Drawings

The Contractor shall provide three sets of cabinet wiring diagrams. The diagrams shall be non-proprietary and shall identify all circuits, as installed, in such a manner as to be readily interpreted. In addition, three cabinet drawings shall be provided with each cabinet to show the component layout in elevation views from the front and rear. An elevation of both aluminum side panels shall also be shown. Elevation views are to be detailed down to the level showing mounting brackets and wiring ducts. All other mounting hardware and cable ties need not be shown. All cables and connectors shall be clearly labeled. Any data sheets for internal cabinet components that have been made available by the manufacturer shall also be provided. One set of the wiring diagram and cabinet drawing shall be placed in a heavy-duty side-opening clear plastic pouch and inserted into the data pocket. The pouch shall be of such design and material that it provides adequate storage and access to the drawings. The other two sets of drawings shall be delivered to the attention of the ITS Engineer, Indiana Department of Transportation, 100 N. Senate Avenue, Room N925, Indianapolis, IN 46204-2217.

Other sections containing specific cross references: None	General Instructions to Field Employees Update Required? Y___ N___ By - Additional or Revision Frequency Manual Update Required? Y____ N____ By – Addition or Revision
Recurring Special Provisions potentially affected: None	Standard Sheets potentially affected: See Item 2-12
Motion: Mr. Second: Mr. Ayes: Nays:	Action: Passed as submitted: revised Effective: - _____Letting _____Supplementals Withdrawn. Resubmit? _____ Received FHWA Approval? _____

REVISION TO 2006 STANDARD SPECIFICATIONS

SECTION 203, BEGIN LINE 47, INSERT AS FOLLOWS:

203.08 Borrow or Disposal

Borrow shall consist of approved material required for the construction of embankments or for other portions of the work and shall be obtained from approved locations and sources outside the right-of-way. Borrow material shall be free of substances that will form deleterious deposits, or produce toxic concentrations or combinations that may be harmful to human, animal, plant or aquatic life, or otherwise impair the designated uses of the stream or area. Unless otherwise designated in the contract, arrangements shall be made for obtaining borrow. Borrow, as designated herein, shall not include material excavated beyond the right-of-way limits at intersecting public roads, private and commercial drive approaches, nor material furnished as B borrow.

~~The proposed~~ *Proposed borrow sites and proposed* disposal site~~(s)~~ for excavated material shall be identified before such material is *excavated or* disposed of within or outside the right-of-way. An inspection shall be conducted *by a qualified wetland professional* to determine if *Federal jurisdictional waters or state regulated wetlands* are present on the site. *Proof of qualification for the wetland professional shall be in the form of a certificate of successful completion, within the past five years, of the Regulatory IV Proponent Sponsored Engineer Corps Training (PROSPECT) or a certification by the Society of Wetland Scientists (SWS) as a Wetland Professional In Training or Professional Wetland Scientist.* ~~This inspection~~ *Wetlands identification* shall be *carried out* in accordance with the *1987* Federal Manual for Identifying and Delineating Jurisdictional Wetland*s and shall include state regulated wetlands as defined in House Enrolled Act 1798. Once the area to be used for borrow or for disposal of excavated material has been shown not to contain Federal jurisdictional waters or state regulated wetlands, the boundary of the area cleared shall be demarcated in a way approved by the Engineer. Only the demarcated area may be used for borrow or disposal.*

Information about PROSPECT may be obtained at (256) 895-7401 and a SWS certified scientist can be located at http://www.wetlandcert.org/search.html.

If the Contractor elects to use the site, all required permits shall be obtained *and notifications submitted*. The Contractor shall develop and construct all mitigation measures and fulfill all requirements detailed by such permits. *The Contractor shall also obtain written permission from the land owner for Department personnel to access the site for monitoring. No excavation shall occur or no material shall be disposed of beyond the boundaries of the demarcated area.*

Before borrow or disposal operations are begun, the Contractor shall submit operation plans for approval. Such plans shall include the following:

(a) a detailed sketch showing the limits relative to property and right-of-way lines;

(b) the grade of all slopes;

(c) an erosion control plan in accordance with the requirements of 327 IAC 15-5;

(d) the encasement, finished grading, and seeding procedures; and

(e) archaeological clearance.

Notice shall be given in advance of opening borrow areas so that cross section elevations and measurements of the ground surface after stripping may be taken and the borrow material may be tested before being used.

Except when a commercial source is utilized, a qualified archaeologist shall perform a record check and field survey of borrow or disposal limits to determine if any significant archaeological sites are within the limits. Results of the record check and survey shall be furnished in writing prior to the excavation of any material. If any archaeological sites are identified, the archaeologist shall establish the limits of the site along with a reasonable border. The site shall not be disturbed unless the archaeological site is cleared by established procedures and written authorization to enter the site has been issued. Under no circumstances shall an employee of the Contractor or the State of Indiana share in the ownership or profit from the sale of any archaeological artifacts that may be salvaged. No extension of completion time will be granted due to any delays in securing approval of a borrow or disposal area.

Unless written permission is granted, there shall be no excavation in a borrow area below the elevation of the adjacent properties within 150 ft (45 m) of the nearest right-of-way line of an existing highway, county road, or city street; the nearest right-of-way line of a proposed highway, county road, or city street; or adjacent property lines. If the properties adjacent to the borrow area are privately owned, the setback limit of 150 ft (45 m) may be lessened if written approval or permission is granted by the owner of the adjacent property, the excavation is in accordance with local zoning laws and requirements, and if lessening the limit is in the best interest of the State. Such minimum distance shall not be closer than 50 ft (15 m) to an adjacent property line. All excavated slopes of a borrow area shall not be steeper than 3:1 down to 2 ft (0.6 m) below the ground water elevation. All excavated slopes 2 ft (0.6 m) below the ground water elevation shall not be steeper than 2:1.

Top soil from the borrow or disposal area shall be stockpiled for use in restoring the disturbed area. A minimum encasement of 6 in. (150 mm) shall be placed on the 3:1 or flatter slopes. Final restoration of borrow or waste disposal areas shall include grading, seeding, or other necessary treatments that will blend the area into the surrounding landscape. Restored areas within 150 ft (45 m) of the nearest right-of-way line shall be well drained. Areas beyond 150 ft (45 m) shall be drained unless the landowner desires other treatment of the borrow area. Construction of borrow or disposal areas shall be in accordance with existing laws, regulations, and ordinances. Under no conditions shall borrow sites detract from the appearance of the natural topographical features nor increase the potential hazard to a vehicle that has inadvertently left the highway.

REVISION TO 2006 STANDARD SPECIFICATIONS

SECTION 203, CONTINUED.

If granulated slag, dunes sand, or other granular material, which is not suitable for the growth of vegetation is used, such material shall not be placed within 1 ft (0.3 m) of the required finished surfaces of shoulders and fill slopes. Additional material required to complete the embankment, such as sandy loam, sandy clay loam, clay loam, clay, or other materials suitable for the growth of vegetation and free from clods, debris, and stones, shall be furnished at the contract price for borrow.

Additional fill material may be secured from within the permanent or temporary right-of-way in lieu of borrow or B borrow either from vertical or horizontal extensions, or both, beyond the lines and elevations of roadway and drainage excavation as shown on the contract plans when authorized in writing. If additional material has been obtained without this written approval, the material will be classified, either as to source or use, to the best advantage of the Department.

Other sections containing specific cross references:

None

Recurring Special Provisions potentially affected:

None

Motion: Mr.
Second: Mr.
Ayes:
Nays:

General Instructions to Field Employees
Update Required? Y___ N___
By - Additional or Revision

Frequency Manual
Update Required? Y___ N___
By - Addition or Revision

Standard Sheets potentially affected:

None

Action: Passed as submitted; revised
Effective - _____ Letting
_____ Supplementals

Withdrawn. Resubmit? _____

Received FHWA Approval? ____

Item No. 3-1
Mr. Cales
Date: 3/17/05

REVISION TO 2006 STANDARD SPECIFICATIONS

SECTION 104, BEGIN LINE 424, DELETE AND INSERT AS FOLLOWS:

104.08 Final Clean-Up

Before acceptance and final payment, the right-of-way, borrow ~~pits~~ *areas*, and all ground occupied in connection with the work shall be cleaned of rubbish, excess materials, temporary buildings, structures, and equipment. Waterways shall be left unobstructed.

Other sections containing specific cross references: None	General Instructions to Field Employees Update Required? Y___ N___ By - Additional or Revision Frequency Manual Update Required? Y____ N____ By – Addition or Revision
Recurring Special Provisions potentially affected: None	Standard Sheets potentially affected: None
Motion: Mr. Second: Mr. Ayes: Nays:	Action: Passed as submitted; revised Effective - _____ Letting _____ Supplementals Withdrawn. Resubmit? _____ Received FHWA Approval? ____

Item No. 3-2
Mr. Kuchler
Date: 3/17/05

REVISION TO 2006 STANDARD SPECIFICATIONS

SECTION 105, BEGIN LINE 404, DELETE AND INSERT AS FOLLOWS:

At any time before acceptance of the work, such portions of the finished work shall be removed or uncovered as may be directed. After examination, said portions of the work shall be restored to the standard required by the specifications. If the work thus exposed or examined proves to be acceptable, the uncovering, or removing, and the replacing of the covering or making good of the parts removed will be paid for ~~as extra work~~ *in accordance with 109.05*. If the work so exposed or examined proves to be unacceptable, the uncovering, or removing, and the replacing of the covering or making good of the parts removed will be with no additional payment.

Other sections containing specific cross references: None	General Instructions to Field Employees Update Required? Y___ N___ By - Additional or Revision Frequency Manual Update Required? Y____ N____ By – Addition or Revision
Recurring Special Provisions potentially affected: None	Standard Sheets potentially affected: None
Motion: Mr. Second: Mr. Ayes: Nays:	Action: Passed as submitted; revised Effective - _____ Letting _____ Supplementals Withdrawn. Resubmit? _____ Received FHWA Approval? ____

REVISION TO 2006 STANDARD SPECIFICATIONS

SECTION 109, BEGIN LINE 581, DELETE AND INSERT AS FOLLOWS:

109.07 Partial Payments

The contract may contain more than one project. Partial payments may be made once each month as the work progresses or twice each month if it is determined that the amount of work performed is sufficient to warrant such payment. These payments will be based on estimates, prepared by the Engineer, of the value of the work performed and materials complete in place in accordance with the contract. No partial payment will be made or estimates will not be submitted when the total value of the work done *on the contract* since the last estimate amounts to less than $500.

Except as set out in 105 IAC 11-3-8 of the Rules For Prequalification of Contractors and Bidding, the balance, less all previous payments and less amounts claimed which are required to be held by the Department in accordance with Indiana Code 8-23-9-26 through 8-23-9-39, will be certified for payment.

No allowance will be made for materials received which have not been incorporated into the work except in accordance with 111.

~~For a bridge contract involving two or more structures, estimates in no less than the minimum as set out herein may be submitted for each structure rather than for the entire contract. If the contract is awarded on the basis of a combination proposal for two or more bridges, one contract will be written for all bridges listed in the combination proposal. Separate semimonthly estimates may be authorized for each individual bridge in the same manner as set out above, the same as though each bridge was awarded as a separate contract, unless otherwise specified.~~

Other sections containing specific cross references: None	General Instructions to Field Employees Update Required? Y___ N___ By - Additional or Revision Frequency Manual Update Required? Y____ N____ By – Addition or Revision
Recurring Special Provisions potentially affected: None	Standard Sheets potentially affected: None
Motion: Mr. Second: Mr. Ayes: Nays:	Action: Passed as submitted; revised Effective - _____ Letting _____ Supplementals Withdrawn. Resubmit? _____ Received FHWA Approval? ____

SMITH, DAN

From: KUCHLER, DENNIS
Sent: Monday, February 21, 2005 7:52 AM
To: SMITH, DAN
Cc: NOVAK, JOE
Subject: FW: Proposed spec change - 109.07 Partial Payments
Follow Up Flag: Follow up
Flag Status: Flagged

Dan, Please read the attachment and the requested change. If you do not see a problem here, go ahead and prepare this for the committee to consider. Thanks, Dennis

-----Original Message-----
From: NOVAK, JOE
Sent: Thursday, February 17, 2005 2:51 PM
To: KUCHLER, DENNIS
Subject: FW: Proposed spec change - 109.07 Partial Payments

Dennis,

I am resubmitting this for your consideration since I have not seen any action on the matter. If you do not think this change should be pursued please let me know. Thank you. Joe

Joseph J. Novak, P.E.
Construction Field Engineer
INDOT - Central Office
Division of Contracts & Construction
Rm N855, 100 N. Senate Ave
Indianapolis, IN 46204
Phone: 317-232-5081

-----Original Message-----
From: NOVAK, JOE
Sent: Monday, October 11, 2004 1:54 PM
To: KUCHLER, DENNIS
Subject: Proposed spec change - 109.07 Partial Payments

Dennis,

Attached is a proposed spec change to section 109.07 Partial Payments. Since we last spoke Yunker further discussed the matter with A&C. Apparently there is no real heartburn with generating pay estimates of any value greater than $1. Based on this information and the fact that the spec was interpreted by both you and Yunker that the $500 minimum applies to the entire contract the attached spec change is made for clarification only. Also, it is recommended that the last paragraph of the section be deleted – Yunker concurs as it adds no real value but only confusion to the guidelines for payment. If this proposal is acceptable please forward for inclusion to the Standards Committee agenda. If the change is approved by the Standards Committee we can send a memo or discuss at annual district conf, etc. to make field personnel aware.

Joseph J. Novak, P.E.
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Phone: 317-232-5081

2/21/2005

REVISION TO 2006 STANDARD SPECIFICATIONS

SECTION 203, BEGIN LINE 1085, DELETE AND INSERT AS FOLLOWS:

If there is no pay item for borrow, the costs of identifying the borrow ~~pit~~ *areas*, the archeological investigation, all required permits, and the opening and closing of the borrow ~~pit~~ *area* will be included in ~~an extra work order~~ *a change order* developed in accordance with 109.05 and paid for as borrow ~~pit~~ *area*.

If the contract documents do not identify excess excavation nor require removal of any items from the site, the cost of identifying a waste area, archeological investigation, all required permits, and the opening and closing of the waste area will be included in ~~an extra work order~~ *a change order* developed in accordance with 109.05 and paid for as waste area.

If a type of excavation for which no pay item exists is required and the new type of excavation requires the Contractor to use equipment not otherwise being used on the contract, all cost involved in determining the type of equipment necessary to complete the work and making this equipment available for the project will be included in ~~an extra work order~~ *a change order* developed in accordance with 109.05 and paid for as additional mobilization and demobilization.

If a type of excavation for which no pay item exists is required and the new type of excavation requires additional traffic control not shown on the plans or results in traffic control being required for an additional period of time, all cost involved in providing the additional traffic control will be included in ~~an extra work order~~ *a change order* developed in accordance with 109.05 and paid for as additional maintaining of traffic.

SECTION 203, BEGIN LINE 1156, INSERT AS FOLLOWS:

No payment will be made for the inspection of disposal *and borrow* sites for wetland identification, obtaining of permits, the development and construction of all mitigation measures, or the fulfillment of permit requirements.

REVISION TO 2006 STANDARD SPECIFICATIONS

SECTION 203 CONTINUED.

Other sections containing specific cross references:

203.09 Pg 200-24
203.20(b) Pg 200-33
205.07 Pg 200-49
206.11 Pg 200-57
207.06 Pg 200-63
713.09 Pg 700-101
715.14 Pg 700-116

General Instructions to Field Employees
Update Required? Y___ N___
By - Additional or Revision

Frequency Manual
Update Required? Y____ N____
By – Addition or Revision

Recurring Special Provisions potentially affected:

None

Standard Sheets potentially affected:

None

Motion: Mr.
Second: Mr.
Ayes:
Nays:

Action: Passed as submitted; revised
Effective - _____ Letting
_____ Supplementals

Withdrawn. Resubmit? _____

Received FHWA Approval? ____

REVISION TO 2006 STANDARD SPECIFICATIONS

SECTION 206, BEGIN LINE 297, INSERT AS FOLLOWS:

In addition to the payment for class X excavation at sign foundations, traffic signal foundations, and highway illumination foundations when there is no contract unit price for class X excavation, a mobilization and demobilization payment for class X excavation will be paid in the amount of $1500.00 per occurrence. Multiple mobilization and demobilization payments will be paid if all project foundation locations are not made available in a reasonable time frame while the equipment is on the project. The cost of this work will be included in ~~an extra work order~~ *a change order* developed in accordance with 109.05 and paid as class X excavation and a mobilization and demobilization for class X excavation.

SECTION 206, BEGIN LINE 346, DELETE AND INSERT AS FOLLOWS:

All backfill material or sub-footing material required whose source is other than structure excavation will be paid for at the contract unit price for the material being used or as extra work if no unit price has been established. *A change order will be prepared in accordance with 109.05.*

The cost of furnishing all materials and labor associated with proof testing of rock shall be included in the cost of other pay items.

If a borrow ~~pit~~ *area* is required and borrow is not specified as a pay item, payment will be made in accordance with 203.28.

Other sections containing specific cross references:

202.03(a) Pg 200-7
206.11 Pg 200-57
714.08 Pg 700-104
802.12 Pg 800-26
805.16 Pg 800-43

General Instructions to Field Employees
Update Required? Y___ N___
By - Additional or Revision
Frequency Manual
Update Required? Y____ N____
By – Addition or Revision

Recurring Special Provisions potentially affected:

None

Standard Sheets potentially affected:

None

Motion: Mr.
Second: Mr.
Ayes:
Nays:

Action: Passed as submitted; revised
Effective - _____ Letting
_____ Supplementals

Withdrawn. Resubmit? _____

Received FHWA Approval? ____

Item No. 3-6
Mr. Cales
Date: 3/17/05

REVISION TO 2006 STANDARD SPECIFICATIONS

SECTION 211, BEGIN LINE 54, DELETE AND INSERT AS FOLLOWS:

211.03 General Requirements

If B borrow or structure backfill is obtained from borrow ~~pits~~ *areas*, the items of obtaining the ~~pits~~ *areas*, their locations, depths, drainage, and final finish shall be in accordance with 203.

Other sections containing specific cross references: None	General Instructions to Field Employees Update Required? Y___ N___ By - Additional or Revision Frequency Manual Update Required? Y____ N____ By – Addition or Revision
Recurring Special Provisions potentially affected: None	Standard Sheets potentially affected: None
Motion: Mr. Second: Mr. Ayes: Nays:	Action: Passed as submitted; revised Effective - _____ Letting _____ Supplementals Withdrawn. Resubmit? _____ Received FHWA Approval? ____

REVISION TO 2006 STANDARD SPECIFICATIONS

SECTION 401, BEGIN LINE 414, DELETE AND INSERT AS FOLLOWS:

If a pay item, Profilograph, HMA, is included in the contract and the above conditions are met, the Contractor shall furnish, calibrate, and operate an approved profilograph in accordance with ITM 912. The profilogram produced shall become the property of the Department. The profilograph shall remain the property of the Contractor. When a profilograph, HMA, is not included as a pay item, and the above conditions are met, the Department will furnish, calibrate, and operate the profilograph or the Department will develop ~~an extra work agreement~~ *a change order* in accordance with 109.05 to include profilograph, HMA as a pay item.

Other sections containing specific cross references: 402.08 Pg 400-25 410.18 Pg 400-47	General Instructions to Field Employees Update Required? Y___ N___ By - Additional or Revision Frequency Manual Update Required? Y____ N____ By – Addition or Revision
Recurring Special Provisions potentially affected: None	Standard Sheets potentially affected: None
Motion: Mr. Second: Mr. Ayes: Nays:	Action: Passed as submitted; revised Effective - _____ Letting _____ Supplementals Withdrawn. Resubmit? _____ Received FHWA Approval? ____

REVISION TO 2006 STANDARD SPECIFICATIONS

SECTION 401, BEGIN LINE 611, DELETE AND INSERT AS FOLLOWS:

Adjustments to the contract payment with respect to mixture, density, and smoothness for mixture produced will be included in a quality assurance adjustment pay item. The unit price for this pay item will be one dollar ($1.00) and the quantity will be in units of dollars. The quantity is the total calculated in accordance with 401.19. ~~An extra work~~ *A change* order developed in accordance with 109.05 will be prepared to reflect contract adjustments.

Other sections containing specific cross references: 410.22 Pg 400-50	General Instructions to Field Employees Update Required? Y___ N___ By - Additional or Revision Frequency Manual Update Required? Y____ N____ By – Addition or Revision
Recurring Special Provisions potentially affected: None	Standard Sheets potentially affected: None
Motion: Mr. Second: Mr. Ayes: Nays:	Action: Passed as submitted; revised Effective - _____ Letting _____ Supplementals Withdrawn. Resubmit? _____ Received FHWA Approval? ____

Item No. 3-9
Mr. Kuchler
Date: 3/17/05

REVISION TO 2006 STANDARD SPECIFICATIONS

SECTION 410, BEGIN LINE 432, DELETE AND INSERT AS FOLLOWS:

Adjustments to the contract payment with respect to mixture, density, and smoothness for mixture produced will be included in a quality assurance adjustment pay item. The unit price for this pay item will be one dollar ($1.00) and the quantity will be in units of dollars. The quantity is the total calculated in accordance with 410.19. ~~An extra work~~ *A change* order developed in accordance with 109.05 will be prepared to reflect contract adjustments.

Other sections containing specific cross references: None	General Instructions to Field Employees Update Required? Y___ N___ By - Additional or Revision Frequency Manual Update Required? Y____ N____ By – Addition or Revision
Recurring Special Provisions potentially affected: None	Standard Sheets potentially affected: None
Motion: Mr. Second: Mr. Ayes: Nays:	Action: Passed as submitted; revised Effective - _____ Letting _____ Supplementals Withdrawn. Resubmit? _____ Received FHWA Approval? ____

Item No. 3-10
Mr. Kuchler
Date: 3/17/05

REVISION TO 2006 STANDARD SPECIFICATIONS

SECTION 501, BEGIN LINE 306, DELETE AND INSERT AS FOLLOWS:

If a pay item, profilograph, PCCP, is included in the contract, and the above conditions are met, the Contractor shall furnish, calibrate, and operate an approved profilograph in accordance with ITM 912. The profilogram produced shall become the property of the Department. The profilograph shall remain the property of the Contractor. When a profilograph, PCCP is not included as a pay item, and the above conditions are met, the Department will furnish, calibrate, and operate the profilograph or the Department will develop ~~an extra work agreement~~ *a change order* in accordance with 109.05 to include profilograph, PCCP as a pay item.

Other sections containing specific cross references: 502.20 Pg 500-23 507.06 Pg 500-44	General Instructions to Field Employees Update Required? Y___ N___ By - Additional or Revision Frequency Manual Update Required? Y____ N____ By – Addition or Revision
Recurring Special Provisions potentially affected: None	Standard Sheets potentially affected: None
Motion: Mr. Second: Mr. Ayes: Nays:	Action: Passed as submitted; revised Effective - _____ Letting _____ Supplementals Withdrawn. Resubmit? _____ Received FHWA Approval? ____

Item No. 3-11
Mr. Kuchler
Date: 3/17/05

REVISION TO 2006 STANDARD SPECIFICATIONS

SECTION 501, BEGIN LINE 593, DELETE AND INSERT AS FOLLOWS:

Adjustments to the contract payment with respect to flexural strength, thickness, air content, range and smoothness will be included in a quality assurance adjustment pay item. The unit price for this pay item will be one dollar ($1.00). The quantity is the total calculated in accordance with 501.28. ~~An extra work~~ *A change* order developed in accordance with 109.05 will be prepared to reflect contract adjustments.

Milled shoulder corrugations will be paid for in accordance with 606.03.

Payment for pavement thickness determinations will be made at the contract lump sum price for coring, PCCP. ~~An extra work agreement~~ *A change order* in accordance with 109.05 will be developed to adjust the cost of coring when the final QC/QA-PCCP quantity differs from the bid quantity by more than 2400 syd (2000 m^2). This adjustment covers the cost of cores for the adjusted quantity of QC/QA-PCCP. The adjustment, plus or minus, will be based on the difference in the number of sublots, rounded to the nearest full sublots,

Other sections containing specific cross references: 502.23 Pg 500-25	General Instructions to Field Employees Update Required? Y___ N___ By - Additional or Revision Frequency Manual Update Required? Y____ N____ By – Addition or Revision
Recurring Special Provisions potentially affected: None	Standard Sheets potentially affected: None
Motion: Mr. Second: Mr. Ayes: Nays:	Action: Passed as submitted; revised Effective - _____ Letting _____ Supplementals Withdrawn. Resubmit? _____ Received FHWA Approval? ____

REVISION TO 2006 STANDARD SPECIFICATIONS

SECTION 502, BEGIN LINE 461, DELETE AND INSERT AS FOLLOWS:

An adjustment to the contract payment with respect to thickness will be made utilizing the quality assurance adjustment pay item. The unit price for this pay item will be one dollar ($1.00). The quantity is the total calculated in accordance with 502.21(c). ~~An extra work~~ *A change* order developed in accordance with 109.05 will be prepared to reflect contract adjustments.

Payment for pavement thickness determinations will be made at the contract lump sum price for coring, PCCP in accordance with 501.31. ~~An extra work agreement~~ *A change order* in accordance with 109.05 will be developed to adjust the cost of PCCP when the final PCCP quantity differs from the bid quantity by more than 2400 syd (2000 m^2). This adjustment covers the cost of cores for the adjusted quantity of PCCP. The adjustment, plus or minus, will be based on the difference in the number of subsections, rounded to the nearest full subsection, times $100.

Other sections containing specific cross references: 305.07 Pg 300-11	General Instructions to Field Employees Update Required? Y___ N___ By - Additional or Revision Frequency Manual Update Required? Y____ N____ By – Addition or Revision
Recurring Special Provisions potentially affected: None	Standard Sheets potentially affected: None
Motion: Mr. Second: Mr. Ayes: Nays:	Action: Passed as submitted; revised Effective - _____ Letting _____ Supplementals Withdrawn. Resubmit? _____ Received FHWA Approval? ____

Item No. 3-13
Mr. Kuchler
Date: 3/17/05

REVISION TO 2006 STANDARD SPECIFICATIONS

SECTION 914, BEGIN LINE 331, DELETE AND INSERT AS FOLLOWS:

(c) Substitutions

Substitutions of plants in size and kind shall be made only after proper execution of ~~an extra work agreement~~ *a change order in accordance with 109.05* and then only when sufficient evidence has been shown that the specified stock could not be secured.

Other sections containing specific cross references: 622.02 Pg 600-72	General Instructions to Field Employees Update Required? Y___ N___ By - Additional or Revision Frequency Manual Update Required? Y____ N____ By – Addition or Revision
Recurring Special Provisions potentially affected: None	Standard Sheets potentially affected: None
Motion: Mr. Second: Mr. Ayes: Nays:	Action: Passed as submitted; revised Effective - _____ Letting _____ Supplementals Withdrawn. Resubmit? _____ Received FHWA Approval? ____